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ABSTRACT

Although research has investigated study skills, self-concept, and academic achievement in college populations, no study has focused on these variables with high school students. To investigate changes in study skills, and the relationships among study skills, self-concept, and academic achievement for high school students, 54 students (28 males, 26 females) participated in a computer-assisted (CAI) study skills module. Students also completed pre- and post-tests on study skills and self-concept (Tennessee Self Concept Scale). An analysis of the results showed that students gained significantly from the study skills program and reported greater self-satisfaction after completing the program. Greater significant gains were reported for the experimental group when compared to the control group, and for seniors and high achievers, when post-test scores were compared with their pre-test scores. Grade point averages correlated significantly with study skills and with one self-concept scale, moral-ethical. These findings suggest that effective study skills lead to academic success and academic success leads to greater self-satisfaction. (Author/BL)

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STUDY SKILLS, SELF-CONCEPT AND ACADEMIC ACHIEVEMENT FOR HIGH SCHOOL STUDENTS

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East Texas State University

Paper presented

at

Southwest Educational Research Association

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ABSTRACT

This study investigated whether there were significant changes in study skills and relationships among study skills, self concepts, and academic achievement for high school students. Results showed that the students gained significantly from the study skills program and reported greater self-satisfaction after completing the program. Results also showed greater significant gains for the experimental group when compared to the control group, seniors and high achievers when the posttest scores were compared with their pretest scores. GPA's correlated significantly with study skills and with one self-concept scale, moral-ethical.

Studies show that instructions on effective study skills have significantly affected students' behaviors and attitudes as measured by various instruments (Brown, 1974; Brown, Wehe, Zunker, & Haslam, 1971; Gadzella, 1977; Gadzella, 1979; Gadzella, 1982a; Gadzella, 1982b; Gadzella, 1982c; Gadzella, 1982d; Gadzella, 1983; Goldston, Zummerman, Seni, & Gadzella, 1977; Light & Alexakos, 1970; Tarpey & Harris, 1979). Some studies showed that study skills significantly affected and /or were related to academic achievement (Brown, et al., 1971; Gadzella, 1977; Gadzella, Goldston, & Zimmerman, 1976; Zimmerman, Goldston, & Gadzella, 1977).

Theorists (Rogers, 1951; Sarbin, 1952) have viewed one's self concept as central to one's behavior. Self concept has been receiving considerable attention in educational theory and practice. Is self concept related to academic achievement? Several researchers (Brookover, 1969; Brookover, Erickson, & Joiner, 1967; Brookover, Patterson, & Thomas, 1962; Coopersmith, 1959; Fink, 1962; Irwin, 1967; William & Cole, 1968; Purkey, 1970) have reported that self concept was related to academic achievement for students in various grade levels. In three reports, Brookover (1962, 1967, and 1969) indicated that self concept was significantly related tc achievement and that the relationship persisted even when measures on intelligence were factored out. In reporting on college freshmen's self-concept, Irwin (1976) indicated that self-concept was significantly related to academic achievement. Williams and Cole (1968) found positive correlations between self-concept and reading and mathematical achievement.

No study was found in which the relationship between self-concept and study skills was reported. However, it would appear that if self-concept was related to academic achievement and study skills were related to academic achievement, then self-concept would be related to study skills.

Study Skills, self concepts and academic achievement have been studied with various college students, but not much is reported on these factors for high school students. The focus of the present investigation was on study skills, self concepts and academic achievement with high school students.

In a recent study, Gadzella (1982c) reported changes in study skills for a group of advanced senior high school students. The subjects in the study received information on effective study skills by going through computer-assisted instruction (CAI) modules on study skills. The question raised was whether other high school students (juniors and seniors, high achievers and low achievers) would gain significantly from the CAI study skills modules.

The purpose of the present study was to investigate whether there were significant (a) changes in study skills for various high school groups after they had gone through the CAI modules on study skills and (b) relationships among study skills, self-concepts and academic achievement (GPA) for high school students. The changes in study skills and self-concepts were determined by students' responses to the pre- and posttests on study skills and self-concept.

The hypotheses made were that:

1. Students who completed the CAI modules on study skills would score significantly higher on the total study skills posttest when compared to their total pretest scores.

2. There would be significant relationships between the total pre- and posttests study skills scores and GPA.

3. There would be significant relationships between the total pre- and posttests self-concept scores and GPA.

4. There would be significant relationships between the total study

skills pretest scores and total self-concept pretest and between the total study skills posttest scores and the total self-concept posttest scores.

METHOD

Subjects

Fifty-seven high school students enrolled in two computer math classes and one algebra class in a southwestern high school in Texas agreed to participate in the study. Since the high school had a limited number of microcomputers available for students' use, students were randomly assigned to Group 1 and Group 2. Students in Group 1 worked on the CAI study skills modules from October 1982 to February 1983. Students in Group 2 worked on the modules from February 1983 through May 1983.

Fifty-four students completed the CAI study skills modules. Of this group, 27 were in Group 1 and 27 were in Group 2. Of the 54 students, there were 28 males and 26 females. Of the 54 students, 11 were in Grade 9, 5 in Grade 10, 18 in Grade 11, and 20 in Grade 12. The average GPA for the group was 2.80. Of this group, 28 students had a GPA of 2.80 or above and 26 students had a GPA of 2.79 and below.

Program

The program consisted of students taking the study skills and self-concept pretests, doing the CAI Study Skills Modules (Gadzella, Brown, & Cochran, 1981), completing the CAI Study Skills Notebook (Brown, Gadzella, Forristall, & Cochran, 1981), and taking the study skills and self-concept posttests.

Ten topics (areas) related to general study skills and how to develop such skills are presented in the CAI Study Skills Modules. The topics were adopted from the Student's Guides to Effective Study (Brown, 1970). The topics

discussed were: time mangement, memory improvement, note taking, textbook reading, examination taking, report writing, oral reporting, scholastic motivation, interpersonal relations, and concentration improvement.

In the CAI Study Skills Modules the computer acts as a transmitter of knowledge on effective study skills and how to develop such skills. Each module ends with a ten multiple-choice item quiz, which are based on the content presented in the module. The computer scores the quiz and interpretes the scores for the students.

All sections in the CAI Study Skills Notebook are correlated with the contents presented in the CAI Study Skills Modules. The Notebook was specically designed to be used with the modules. With the suggestions provided in the modules, students are asked to write in their notebook the points mentioned in each of the topics. After completing the modules, students keep the notebook for future references.

The CAI Study Skills Test - High School (Gadzella & Brown, 1982) was the instrument used for pre- and posttests. It is a paper and pencil, self-reporting instrument consisting of 160 True and False items. The test was designed to measure the respondents' knowledge and understandings of the study skills discussed in the ten CAI Study Skills Modules. The CAI Study Skills Test - High School is similar in content and format to that of the CAI Study Skills Test (Brown & Gadzella, 1981) except that the items are addressed to high school students and the test is shorter. The test has 10 sclaes (with 16 items in each scale) measuring the following areas:

1. Time Management - measures one's knowledge about how to effectively make use of the avaliable time.
2. Memory Improvement - measures one's knowledge about how to effectively improve one's remembering of studied materials.

3. Note Taking - measures one's knowledge about how to effectively listen to lectures and take good lecture notes.

4. Textbook Reading - measures one's knowledge about how to effectively comprehend and retain what one has read.

5. Examination Taking- measures one's knowledge about how to effectively prepare for and take different kinds of tests.

6. Report Writing - measures one's knowledge about how to effectively write in-class themes and research reports.

7. Oral Reporting - measures one's knowledge about how to effectively prepare and deliver speeches and oral reports.

8. Scholastic Motivation - measures one's knowledge about how to effectively improve one's scholastic motivation.

9. Interpersonal Relations - measures one's knowledge about how to effectively improve one's interpersonal relationships.

10. Concentration Improvement - measures one's knowledge about how to effectively improve one's ability to concentrate on one's studies.

11. Study Effectiveness - combines the scores on all ten scales to provide a single over all measure of one's knowledge about effective study skills.

The test was hand scored. Scores were obtained for each scale and the total test.

The Tennessee Self-concept Scale, TSCS, (Fitts, 1964) was the instrument used to obtain a self-concept measure. It is used in many high school and colleges to obtain a student's self-concept measure. The TSCS is a 100 self-descriptive statement instrument in which the subject indicates to what degree the statement applies to him/her. In this study, the focus was on the total score. However, a number of different scales can be derived from the TSCS. Eight scales, with 90 of the 100 items, assess an internal frame of self-reference (Identity, Self-Satisfaction, Behavior) and an external frame of reference for self-concept (Physical, Moral-Ethical, Personal, Family, Social Self) (Roffe, 1981). These eight TSCS scales were also examined in this study.

Procedure

At the beginning of the fall semester, permissions were obtained from

parents to have their sons and daughters participate in the study and consent was obtained from the students to participate in the study. The data collected were to be used only for research purposes but each student was to receive information on his/her study skills scores. The TSCS used was the research form; the data derived from the TSCS were used only for research purposes.

The pre- and posttest study skills and TSCS scores were analyzed using the t-test, analysis of covariance, and Pearson-product moment of correlation. The pretest refers to the test students responded prior to doing the CAI Study Skills Modules and posttest refers to the test students responded to after they completed the CAI modules.

RESULTS

(a) Changes in Study Skills and Self-concept

Twenty-seven students in Group 1 and 27 students in Group 2 completed the CAI Study Skills Modules and the pre- and posttests on study skills. Their scores on study skills were analyzed using a t-test. The means, standard deviations and t-tests for all scales of the study skills test (N = 54) are reported in Table 1. The data show that the total average (69) for the posttest was significantly ($p < .005$) higher than the total average (64)pre-test. This can be interpreted that students gained insights on effective study skills from the CAI modules.

Table 1 also shows that students obtained significantly ($p < .03$) higher scores on the posttests on six study skills scales: time management, note taking, report writing, oral reporting, scholastic motivation, and concentration improvement. However, one should be cautious in interpreting and generalizing from these data since the number of items in each scale was only 16 and the number of students responding to the test was not very large.

There were 27 students in Group 1 who completed the CAI modules in February. Their responses on the pre- and posttest on study skills were compared with the 27 students who did not as yet (in February) begin the CAI modules. The data were analyzed using the t-test. See summary in Table 2. The results show that students who completed the CAI modules scored significantly ($p < .03$) higher on the total study skills posttest and significantly ($p < .01$) higher on Note Taking and Concentration Improvement scales when compared with their pretest scores. Posttest scores for students who did not do the modules (Group 2) did not differ significantly from their pretest scores. These findings concur with other findings (Gadzella, 1980; Gadzella, 1982a; Gadzella, 1982c; Gadzella, 1977)that when students received study skills instructions they scored significantly higher on the posttests.

The data from the study skills pre- and posttests were analyzed for juniors (Grades 9 and 10) and seniors (Grades 11 and 12) using the t-tests. The results are presented in Table 3. Seniors gains significantly ($p < .002$) higher scores on the total study skills posttest and significantly ($p < .04$) higher on Textbook Reading, Oral Reporting, Scholastic Motivation, Interpersonal Relations, and Concentration Improvement than on their pretests. The data for juniors showed no significant difference on pre- and posttests. However, since there were only 16 students in the junior group, generalizations could not be made from such a small group.

The data from the study skills pre- and posttests were analyzed for high achievers (GPA = 2.80 and higher) and for low achievers (GPA = 2.79 and below). Data are presented in Table 4. High achievers scored significantly ($p < .02$) higher on the following posttests when compared with their pretests: Time Management, Textbook Reading, Report Writing, Scholastic Motivation, and

Concentration Improvement. Whereas, the low achievers scored higher ($p < .02$) on Oral Reporting. The finding that seniors gained significantly from the CAI modules is similar to that reported in a previous study (Gadzella, 1982) where senior high school students gained significantly from the CAI study skills modules. It is suggested that a larger number of low academic achievers in the high schools take the study skills modules before generalizations are made.

There were 54 students who responded to the pre- and posttest TSCS. The data were analyzed using the t-test. The results showed that the total self-concept pre- and posttest scores did not differ significantly ($p \geq .05$). Signicant differences ($p < .03$) were found on the Self-Sastisfaction scale. That is, students' self-satisfaction or self-acceptance was greater after they completed the CAI Study Skills Modules.

(b) Correlations Between Study Skills and GPA.

Correlations were computed for 57 students on their pretest study skills and GPA and for the 54 students on their posttest study skills scores and GPA. Data are presented in Table 5. The results show that the total study skills pre- and posttest scores correlated significantly ($p < .02$) with GPA. This means that high school students' study skills are related to their academic achievements. This finding concurs with those of previous studies (Brown, et al., 1971; Gadzella, et al., 1976; Gadzella, 1977;Zimmerman, et al., 1977). It should also be noted that posttest scores for eight study skills scales correlated significantly ($p < .03$) with GPA.

(c) Correlations Between TSCS and GPA.

Correlations were computed for the 57 students on the pretest TSCS and GPA and for the 54 students posttest TSCS and GPA. The total self-concept

scores did not correlate significantly ($p > .05$) with GPA. The data are presented in Table 6. For the eight TSCS scales studied, only the pretest Moral-Ethical scale correlated significantly ($p < .001$) with GPA. However, with a larger number of subjects, the results might have been different.

(d) Correlations Between Study Skills and Self-concept.

Correlations were computed between the total pretests on study skills and self concept and total posttests on study skills and self-concept. The correlations were not significant. Again, this may be due to the small number of subjects in the study. It is suggested that other studies be conducted with larger samples of students.

SUMMARY AND DISCUSSION

The present study investigated the (a) changes in study skills for high school students who completed the CAI Study Skills Modules and (b) relationships among study skills, self-concepts, and academic achievement for high school students. The data showed that as a total group, high school students gained significant insights on effective study skills by doing the CAI Study Skills Modules. Results also showed that students scored higher on the posttest on six scales:Time Management, Note Taking, Report Writing, Oral Reporting, Scholastic Motivation, and Concentration Improvement.

Data were analyzed by different student characteristics; the results can be summarized as follows. (a) Students who completed the CAI modules scored significantly higher on the total test and three scales (Memory Improvement, Note Taking, and Concentration Improvement) than students who did not do the modules. (b) Seniors scored significantly higher on the total test and five scales (Textbook Reading, Oral Reporting, Scholastic Motivation, Interpersonal Relations, and Concentration Improvement) when compared to their pretest scores. (c) High achievers scored significantly higher on the total test and five

scales in the posttest (Time Management, Textbook Reading, Report Writing, Scholastic Motivation, and Concentration Improvement). Low achievers scored higher on Oral Reporting scale.(d) On self-concept, the total group scored higher on Self-Satisfaction after completing the CAI modules. (e) Total study skills scores correlated significantly with GPA and more posttest scale scores correlated significantly with GPA than pretest scores. (f) GPA did not correlate significant with the total self-concept scores but did correlate significantly with the Moral-Ethical scores. (g) The total self-concept scores did not correlate significantly with the total study skills scores.

Several observations can be made from these findings and those of previous studies. Effective study skills do improve students' academic performances and, thus, raise students' GPA. High, positive self-concepts do not cause high academic achievement. It seems to be a necessary and vital personal quality for one to have prior to achievement, but it is no guarantee that high achievement will naturally follow (Hamachek, 1979). Staines (1968), in studying teacher influence on students' self-concept stated that teachers might familarize themselves with the general area of self-concept dynamics and how this dynamics are related to behavior. He suggested that teachers might highlight the students' strengths, assets and skills by providing not only feedback on information but also inspiration and direction and offer some hope of success. School success predicts the regards one has for self and one's own ability (Kifer, 1975). Thus, success in school leads to self-satisfaction and self-satisfaction leads to greater efforts in school work. In this sense, it would appear that the three factors are related, in that, effective study skills lead to academic success and academic success leads to greater self-satisfaction.

Although other studies with larger number of students should be conducted, the results of the present study and that of previous studies reinforce the importance of effective study skills for high school students. Program designers might take this into account and offer a study skills course to all the students and encourage the students to apply the skills they had learned.

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Table 1

Percentages, Mean Scores, Standard Deviations, Standard Errors, and t-Tests (df = 53) on Pre- and Posttests of Study Skills Test (N = 54)

Study Skills	Test	Percentage	Mean Score	Standard Deviation	Standard Error	t-test
Time Management	Post	72	11.50	2.26	0.31	
	Pre	67	10.69	1.83	0.25	2.45**
Memory Improvement	Post	76	12.09	2.59	0.35	
	Pre	76	12.11	2.22	0.30	-0.05
Note Taking	Post	67	10.69	2.23	0.31	
	Pre	62	9.94	2.65	0.36	2.19*
Textbook Reading	Post	68	10.85	2.41	0.33	
	Pre	64	10.26	2.02	0.28	1.72
Examination Taking	Post	72	11.54	2.58	0.35	
	Pre	70	11.24	2.07	0.28	0.98
Report Writing	Post	66	10.52	2.83	0.39	
	Pre	61	9.76	1.94	0.26	2.23*
Oral Reporting	Post	62	9.94	2.45	0.33	
	Pre	57	9.13	2.42	0.33	2.62***
Scholastic Motivation	Post	74	11.87	2.73	0.37	
	Pre	64	10.19	2.89	0.39	3.68***
Interpersonal Relations	Post	62	9.87	2.30	0.31	
	Pre	57	9.19	2.50	0.34	1.83
Concentration Improvement	Post	71	11.28	2.67	0.36	3.79****
	Pre	62	9.87	2.70	0.37	
Study Effectiveness (Total)	Post	69	110.39	19.29	2.63	4.35****
	Pre	64	102.35	14.18	1.93	

*$p < .03$

**$p < .02$

***$p < .01$

****$p < .005$

Table 2

Means, Standard Deviations, and t-Tests for Pre- and Posttests of the Study Skills Test for Group 1, N = 27 (did Program), and Group 2, N = 27 (did not do Program), (df = 26)

Study Skills Scale	Group	Test				t- Test
		Pretest		Posttest		
		M	SD	M	SD	
1. Time Management	1	10.63	2.20	11.37	2.29	1.44
	2	10.74	1.40	10.48	2.17	-0.66
2. Memory Improvement	1	12.67	2.27	11.41	2.66	-2.71***
	2	11.56	2.06	11.63	2.47	0.17
3. Note Taking	1	9.48	2.97	10.78	2.28	2.24**
	2	10.41	2.26	9.83	2.80	-0.97
4. Textbook Reading	1	10.44	1.85	10.78	2.34	0.68
	2	10.07	2.20	10.19	2.42	0.22
5. Examination Taking	1	11.41	2.15	11.22	2.83	-0.45
	2	11.07	2.02	11.56	2.53	0.93
6. Report Writing	1	9.70	2.33	10.07	3.11	0.78
	2	9.82	1.50	10.37	2.32	1.28
7. Oral Reporting	1	9.04	2.50	9.63	2.57	1.18
	2	9.22	2.38	9.52	2.17	0.71
8. Scholastic Motivation	1	10.44	3.04	11.85	2.93	1.95
	2	9.93	2.76	10.52	3.38	0.83
9. Interpersonal Relations	1	8.85	2.77	9.67	2.79	1.46
	2	9.52	2.19	9.48	2.29	-0.06
10. Concentration Improvement	1	10.48	2.64	11.56	2.46	2.77***
	2	9.26	2.67	9.96	2.08	1.52
Study Effectiveness (Total)	1	103.15	16.18	108.82	20.73	2.26*
	2	101.56	12.10	104.82	18.45	1.14

*$p < .03$

**$p < .02$

***$p < .01$

Table 3

Means, Standard Deviations, and t-Tests for Pre- and Posttests of the Study Skills Test for Two Groups, Grades 9-10 (N = 16) and Grades 11-12 (N = 38)

Study Skills Scale	Group Grade	Test				t-Test
		Pretest		Posttest		
		M	SD	M	SD	
1. Time Management	9-10	9.94	1.73	10.25	2.65	0.72
	11-12	11.00	1.80	12.03	1.88	2.36
2. Memory Improvement	9-10	11.38	2.06	11.31	3.16	-0.09
	11-12	12.42	2.24	12.42	2.29	0.00
3. Note Taking	9-10	9.50	2.66	10.13	2.28	0.96
	11-12	10.13	2.66	10.92	2.20	1.97
4. Textbook Reading	9-10	9.63	2.16	9.38	2.45	-0.43
	11-12	10.53	1.93	11.47	2.14	2.27*
5. Examination Taking	9-10	10.13	1.89	10.13	2.58	0.00
	11-12	11.71	1.99	12.13	2.36	1.19
6. Report Writing	9-10	8.38	1.50	9.19	2.34	1.26
	11-12	10.34	1.82	11.08	2.85	1.82
7. Oral Reporting	9-10	8.19	2.37	8.25	2.27	0.10
	11-12	9.53	2.36	10.66	2.17	3.25***
8. Scholastic Motivation	9-10	9.81	2.32	11.06	2.72	1.56
	11-12	10.34	3.11	12.21	2.69	3.33***
9. Interpersonal Relations	9-10	9.00	2.45	9.06	2.33	0.09
	11-12	9.26	2.54	10.21	2.23	2.11*
10. Concentration Improvement	9-10	8.94	1.84	9.75	2.46	1.09
	11-12	10.26	2.92	11.92	2.52	3.91***
Study Effectiveness (Total)	9-10	94.88	12.07	98.50	18.09	1.21
	11-12	105.50	13.95	115.39	17.70	4.38***

*$p < .04$
**$p \leq .02$
***$p < .002$

Table 5

Correlations Between Pre- and Posttests of the Study Skills Scales and Total Test With Grade-Point Averages (GPA)

Study Skills Scales and Total Test	Correlations With GPA	
	Pretest (N = 57)	Posttest (N = 55)
1. Time Management	.17	.47**
2. Memory Improvement	.23	.36**
3. Note Taking	.19	.24
4. Textbook Reading	.25	.45**
5. Examination Taking	.32**	.48**
6. Report Writing	.41**	.38**
7. Oral Reporting	.53**	.49**
8. Scholastic Motivation	-.03	.32**
9. Interpersonal Relations	.06	.06
10. Concentration Improvement	.05	.37**
Study Effectiveness (Total)	.34**	.48**

*$p < .03$

**$p < .02$

Table 6

Correlations Between Pre- and Posttests of the Tennessee Self Concept Scales (TSCS) With Grade-Point Averages (GPA)

TSCS	Correlations[1] With GPA	
	Pretest (N = 57)	Posttest (N = 54)
Identity	.10	.18
Self Satisfication	.17	.17
Behavior	.23	.22
Physical Self	.01	.15
Moral Ethical Self	.33***	.21
Personal Self	.15	.20
Family Self	.05	-.00
Social Self	.22	.14
Total Positive	.21	.15

[1]Correlations rounded to nearest hundredth.

*$p < .03$

**$p < .02$

***$p < .01$